NASA, USBI Engineers Turn Into "Roads" Scholars

Bob Lessels/LA02
205-544-6539
E-mail: bob.lessels@msfc.nasa.gov

A process developed by MSFC and United Technologies' USBI to apply heat-resistant coatings to the Space Shuttle's solid rocket boosters is finding a new use. It has been successfully used to apply a new, skid-resistant surface to an interstate highway bridge south of Huntsville, AL.

The demonstration, conducted with the cooperation of the Alabama Department of Transportation, successfully resurfaced a bridge on Interstate 65 (I–65) between Huntsville and Cullman, AL. Using the new process—called convergent spray—the coating was applied in less than 1 hour. Four hours after the application was completed, the roadway was reopened to traffic. This is a fraction of the time such a resurfacing normally would require. In addition to being faster, the cost of the resurfacing was considerably less than it would have been using conventional methods.

Figure 206.—This roadway was reopened just 4 hours after the skid-resistant coating was applied.

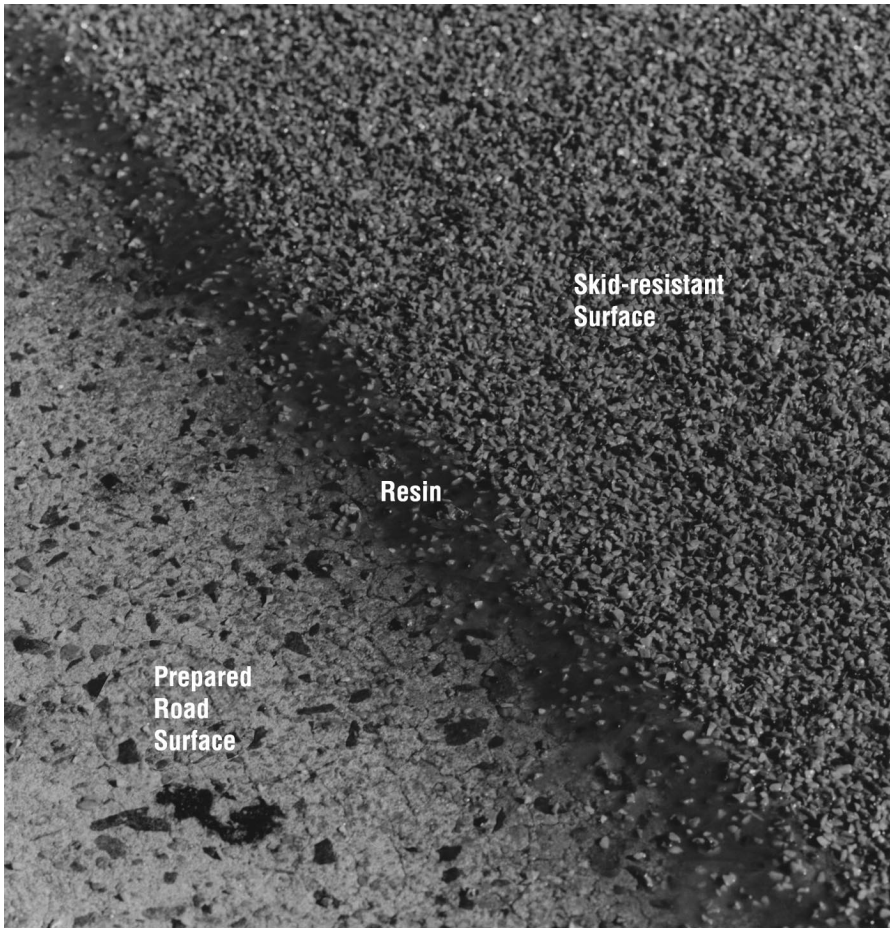

Figure 207.—A close-up of the I–65 roadway resurfacing project, ground flint and resin was used providing a higher degree of traction and better protection from erosion.

Once the surface is prepared, the conventional method requires workers to apply a coat of resin to the roadway, manually lay down a coat of gravel or skid-resistant material, then apply a second coat of resin. The new space-age process does the entire job in one pass.

"Not only does it shorten the job, the process does not harm the environment," Kyle Hamlin, a materials engineer at USBI said. The tool uses a solvent-free spray which significantly reduces the hazardous waste normally associated with most spraying processes.

Another environmental plus is that recycled filler materials and common resin systems can be used in the device.

For the I–65 bridge roadway resurfacing project, these space-age roads scholars used a mixture of ground flint and resin. The new coating provides a higher degree of traction and will better protect the bridge from erosion than do traditional roadway coatings.

Vernotto McMillian, technical manager in the Marshall Center's Technology Transfer Office, said, "The project afforded us the opportunity to evaluate a new pollution-preventing technology as well as to test different resin systems and filler materials which might be used for other NASA programs. We took an existing NASA technology, developed it for use in other NASA and commercial projects, and

demonstrated that its use would afford a cheaper, better product that saves time," he said.

The bridge resurfacing project is the result of a 1994 agreement between Marshall and the Federal Highway Administration's office for the southeastern United States. Marshall and its contractors agreed to provide innovative technology derived from the space program and put it to use for a variety of highway applications, including corrosion-resistant coatings for metal bridges and skid-resistant surface treatments for pavement.

The new process may have a number of other applications. It is currently being used to apply a roof coating to two commercial buildings. Investigators also are working with a food company to spray toppings on snack foods.

"The successful commercial adaptation of this space program technology is yet another example that shows America's space program is paying off for American business and industry. Technologies, developed for the nation's space program by NASA and its contractors, are now at work in thousands of American firms, benefiting millions of Americans," said Harry G. Craft Jr., manager of the Technology Transfer Office at the Marshall Center. American firms wishing to discuss ways in which NASA technical assistance programs might benefit them are encouraged to call 1–800–USA–NASA.

Sponsor: Office of Commercial Development and Technology Transfer

Biographical Sketch: Bob Lessels is the technical writer/editor (physical sciences) for the Technology Transfer Office at the Marshall Center. A graduate of the University of Nebraska, he has been a professional journalist for the past 30 years. He joined NASA in 1986.